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THE GESOLEI AT DÜSSELDORF[1]

From the date of the first international congresses on statistics (Brussels, 1851) and public hygiene (Brussels, 1852), one of the principal aims of physicians has been to educate the public as to ways and means of preserving health and warding off disease by "objective teaching" or visualization (*Anschauungsunterricht*). In the earlier stages, this was usually accomplished by graphs and diagrams designed to convey the net result of statistical computations to the mind's eye or photographs illustrating the ravages of communicable diseases and the known methods of preventing them. A little later, the Paris Exposition (1855) became the starting point of the many exhibits of apparatus, appliances and inventions illustrating advances in practical sanitation. Displays of this kind constituted a feature of all subsequent national or international exhibitions on a grand scale, particularly those held at Paris in 1867, 1878, 1889 and 1900, the Centennial at Philadelphia (1876) and the subsequent exhibitions at Chicago (1893), Buffalo (1901), St. Louis (1904) and San Francisco (1914). The attractive features and beautiful environs of Düsseldorf and Munich have made them natural centers for such *Ausstellungen,* and under the inspiration of Sudhoff, who was then practising in Hochdahl, a suburb of Düsseldorf, that city had three successive expositions devoted to the history of medicine and hygiene in 1898–9 and 1895. The culmination of these efforts was the great International Exposition of Hygiene at Dresden in 1911, the historical section of which (also got up by Sudhoff) comprised no less than 20,394 material objects, rang-

[1] Schlossmann, Bürgers *et al.*: Die Gesolei. Umschau, Frank. a M., 1926, xxx, 589–609.

ing from prehistoric times to the middle of the 19th century. Through the European War and its consequences, Germany became so crippled as to financial resources and housing facilities that the idea of getting up expositions was until very recently unthinkable. At the same time, war-time propagandism introduced a new feature, the poster, with its possibilities of arresting attention by the grotesque phases of impressionism. The Gesolei at Düsseldorf (1926), which has been an object of intense interest to foreign visitors, is the first German hygienic exhibit of consequence since 1911, and has incurred some criticism as a waste of money in time of financial stringency, although it has given employment to some 15,000 people. It is unique in its determinate program of conveying results of statistical tabulations and computations by means of allegorical posters. A striking example of the efficiency of this method is to be seen in a cartoon in the advertising pages of current German medical periodicals, illustrating the fact that, as life insurance risks, the lean, lank attenuated people have better chances of longevity than the short, fat and stocky. The idea is conveyed by a parallel processional of lean and fat people toward an advanced age (80 or 90). Only the lank and attenuated reach the goal.

Gesolei is a newly coined word, compounded of the initial syllables of the German expressions for hygiene (*Gesundheitspflege*), social welfare (*Soziale Fürsorge*) and physical exercise (*Leibesübung*), the three main subdivisions of the exhibit, which was planned in 1924, by Prof. Arthur Schlossmann, the eminent pediatrist, with the cooperation of Dr. Robert Lehr, burgomaster of Düsseldorf, and Prof. Kreis, who is responsible for its artistic merits. The Hygienic Section, directed by Prof. Bürgers, of the Düsseldorf Medical Academy, comprises 12 sections, viz., 1, man in general; 2, heredity and racial hygiene; 3, air and climate; 4, nutrition; 5, man in relation to plants and animals; 6, habitations and settlements; 7, clothing and personal hygiene; 8, nursing; 9, communicable diseases; 10, colonial hygiene and tropical diseases; 11, industrial hygiene; 12, military and naval hygiene in the recent war; with special exhibits illustrating water supply, disposal of sewage, fire prevention, transportation of the sick and wounded and the like. Pictures, models, dummy figures, images, dioramas, diapositives, rhenoscopes and films are freely used.

There is a round-house called "The Transparent Man," in which Spalteholtz has installed representations of the brain and all other parts of the body in glass, thus extending the transparent anatomy of Leonardo da Vinci to three dimensions. There is a special pavilion devoted to Jewish hygiene through the ages, a House of the Physician, containing letters, prescriptions and portraits of famous medical men, a Physician's Garden, reproducing the cloister garden at St. Gall, a model first aid station, a display of the appointments of a model hospital, a model infant's home, an exhibit of "Two Thousand Years of Hygiene on the Rhine, in 15 dioramas devised by Haberling, three life-sized panoramas of the existence of prehistoric man and a "color-piano." The exhibit of water supply and disposal of sewage is of vast extent, showing their historic, technical and industrial aspects, with such features as a relief-model of the water-works of the Rhineland and Westphalia and a panorama of dams for protecting valleys from inundation. The disposal of excreta in remote antiquity begins with the primitive employment of the four principles of ancient medicine, earth, air, fire, water. Then come the gigantic drains of the Assyro-Babylonians, including models of sewer-piping from Assur (the oldest city of Assyria), and Babylon, the temple of Baal at Nippur (2000–1000 B.C.), the palace of Tikulti-Ninib (1250 B.C.), the palace of Sargon at Chorsabad (800 B.C.), and the Southeast palace of Nimrod at Nineveh (800 B.C.). All these structures reveal a remarkable proficiency in the mechanics of vaulted enclosures, archways and the junction and jointing of pipes. The Egyptian exhibit, from the mausoleum of King Sahu-re, goes to show that the great pyramids and temples had complete arrangements for the collection of rain water and the disposal of sewage by a vast system of copper pipes. Models of the sewerage system of the palaces at Knossos, Crete (3500 B.C.) and Tiryns (1450–1250 B.C.), as also specimens of canalisation from ancient Athens, Pergamon and Priene, indicate that the Greeks were nowise backward in sanitary engineering, as evidenced also by their elaborate washstands and shower baths and by an Athenian ordinance of 320 B.C., inflicting punishment for the casting of offal into the streets. Roman sanitary engineering is represented by models of the Cloaca maxima and of sewers from the Temple of Hercules (Rome),

Olmo and Aosta. The proneness of savages to cover up excreta with earth and sand is borne out by the remark of the Indian chief about army latrines: "White man must think a lot of filth to build a house around it." Yet water-closets have existed from remotest antiquity and the Gesolei displays models from Babylon, Nineveh, Knossos, Tell-el Amarna (1400 B.C.), Cairo (640 B.C.), Priene and Pompeii, with multiple arrangements in rectangular formation from Puteoli (45 seats) and in ring formation from the bathrooms of the Roman military station at Timgad in the Sahara (28 seats) and the palace of Augustus Caesar in Rome (3 seats). The ancient Egyptians usually preserved excreta in canopic jars, of which arrangement the cesspools of the Levantine countries are a variant. In the Middle Ages, in fact, the intuitive or immanent hygiene of the Greeks and the Romans disappeared. Squalor, filth, crime, shortage of food, epidemic diseases, infanticide and other evils of overcrowding were the portion of the mediæval walled towns for centuries. Municipal sanitary ordinances began to appear in the 13th century, quarantine regulations during 1374–1403. Sewerage and cleansing of sewers were reestablished in Rome by the Papacy in the 16th century. The Gesolei shows models of latrines from the cloister of St. Gall, from castles at Eltz on the Moselle, Bachrach and Oberwesel on the Rhine, from the Italian Castel del Monte (1240), the Hohenstauffen palace at Lagopesole (1250), from the Palazzo Davanzati at Florence (1300) and from the castles of the Teutonic order at Lockstedt and Thorn. The first German city to possess an adequate system for flotation and piping of sewage was Bünzlau (Silesia) in the 16th century. Until the middle of the 19th century, when sanitation acquired an *impetum faciens* from the cholera epidemics of 1831–49, little advance was made in water supply and sewage disposal. Extant plans of the water works of the German cities show the possibility of contamination by proximity to local abattoirs, tanneries and the like. The recent inventions of flush tanks, sand filters, soil filters, and of bacterial purification by means of septic tanks, irrigation fields, fish ponds, activated slime and the Imhoff system (Emscher Thal) may be seen in detail at the Gesolei, in the shape of a model house, transparencies showing the dangers from overflow

and from liquid explosives in sewer-pipes, with innumerable pictures and models.

The section on Social Welfare at the Gesolei proved a surprise to those who had predicted that, in the absence of worthwhile material, it would repel by piling up columns of unintelligible statistics. Precisely the merit of the Gesolei is that it is designed to instruct the people by methods common to the picture-writing of savages, the tavern-sign, the placard, the poster and the movies. Thus the recent birth and mortality rates of Germany are conveyed by a bell and clock-dial arrangement, punctuating the facts that every 24 seconds a child is born, every 72 seconds a couple is married, every 42 seconds some one dies. The longevity of the German population since the war is indicated by pyramids of dolls, tapering off into solitary dolls of advanced age, the decline in the birth rate and of the male population from battle losses being graphically emphasized. The Communal League of Social Welfare (organized 1925) exhibits a large model-city of the future, of half a million inhabitants. Under the trees of the Hofgarten, the model Infant Home, with glass walls, holds visitors for hours with its twelve lusty babies, sometimes in revolution on a merry-go-round. To this is attached a "light and air-bath" in which recuperation *via* the Liliputian railway and other outdoor pleasures is afforded to 20 children daily. The section is policed by women, who look after 150 needy people *per diem*. Among the most striking of the posters are those showing the 10 separate movements necessary to clean the teeth fore and aft, the tendency of houses to become damp in proportion to the number of children, the transmission of communicable diseases by animal and human carriers and the effect of preventive measures upon the incidence and mortality rates, the inflation of the sickness-insurance fund from 77 million marks (1891) to 2,091 million marks (1920) and its subsequent collapse, the causes of scarcity of habitations (*Wohnungsnot*) during 1919–24, the proportion of trees and grassplots in Prussia and the industrial districts on the Rhine, and the ratio of the number of children per family to child mortality per 100 in the following occupations: learned classes (2.7 : 5.4), officials and teachers (3.04 : 6.1), artistic professions (3.2 : 8.1), merchants (3.41 : 9), mechanics (3.83 : 15.6), clerks (4.31 : 16.3), day laborers (5.96 : 20.7). In spite of the

fact that plague, cholera and smallpox are now known by name only, it is shown that one-third of deaths are still due to communicable diseases. During 1918, 98,000 died from tuberculosis and 120,000 from Spanish influenza. The number of deaths from food shortage during the war period (1914–18) was 762,796 in the civilian population alone, which must be considered in connection with the tremendous war losses of the German army, viz., 1,531,048 killed, 4,211,469 wounded, 155,013 died from disease, 991,340 missing (total, 6,888,870).

The oxygen consumption of the body in different kinds of exercises is indicated by the proportionate burning of a candle, and the fact that the total area of the 350 million air chambers of the lungs (150 square meters) is 70 times greater than the surface area of the body (2 meters) is driven home on a poster showing a man against a wall 70 meters long and one meter in height. The section on physical exercise is handled in the same intelligent way. The development of Swedish movements (for the whole body) from gymnastics used long ago in the Swedish and Danish armies, the exhibit of gymnasium costumes of circa 1825, 1885 and 1925, the cubicle exhibits of the different societies devoted to hockey, tramping, riding, fencing, swimming, tennis, cycling and aviation, the fine fresco paintings of the Athenian Stadion and of the sports of mediæval chivalry, and the daily exhibitions of the different schools for rhythmic gymnastics and of other units of the Gymnastic League in the Planetarium, demonstrate the steady growth of Germanic interest in "sport" since the days of Turnvater Jahn and since the war. The coöperation of local organizations and of many commercial plants have made the Gesolei possible. It may not appeal to the sophisticated. Its merits and defects are those of an essential folk-exhibition, "of the people, for the people and by the people."

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